CIFRI NEWS

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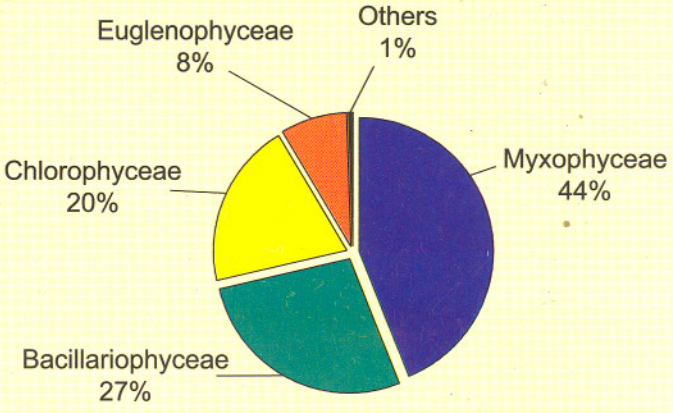
Central Inland Fisheries Research Institute

RESEARCH BRIEF

AMBLYPHARYNGODON MOLA – A POTENTIAL INDIGENOUS SPECIES

Commonly known as Mola carplet, *Amblypharyngodon mola,* inhabiting ponds, canals, wetlands, streams and paddy fields, has high percentage of edible protein and vitamin-A in its body, in comparison to many major carp species currently promoted in aquaculture and culture based fisheries for nutritional security of our people. Once a major component of the indigenous fishery of wetlands in West Bengal, its availability has now been drastically reduced due to over exploitation. The investigations on biology of this species will provide necessary inputs to formulate an action plan for its conservation, stock enhancement and artificial propagation.

A. mola



Food spectrum of *A. mola*

Biological traits

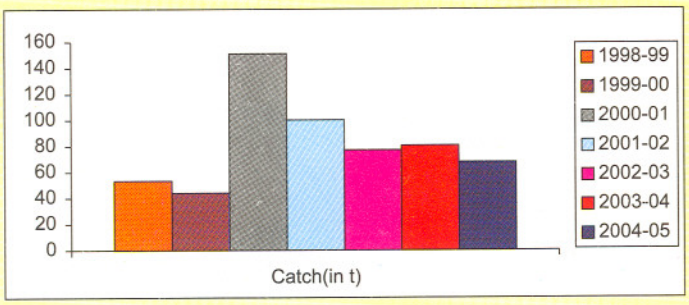
The fish subsists predominantly on phytoplankton (90%) and the rest on zooplankton. The dominant food plankton were *Melosira, Cyclotella, Navicula, Synedra, Asterionella, Fragilaria* and *Pinnularia* among phytoplankton while zooplankton were represented by Rotifera and Rhizopoda.

The sex ratio of the fish was in favour of females and they were bigger in size (av. 68.4mm, 3.5g) than males (av. 56.9 mm, 1.8g). Fecundity ranged from 21(64 mm and 2.65g) to 16867 (90 mm and 8.98g). Males attained first maturity at 51-56 mm and females at 39-44 mm in length. April to October was the period when the percentage occurrence of ripe ova (0.51-0.7 mm in diameter) were at their peak, indicating breeding period. The fish breed during April-October in the wetlands. Random catch of stocks revealed that 45% of the stocks contributing to the fishery were in the size group of 61-70 mm in total length.

Awareness to Conserve Hilsa stocks - CIFRI initiative

Post larvae, fry, fingerlings and juveniles of hilsa are abundantly available in the upper stretches of the Hooghly estuary during November to May corresponding to their down stream migration to the sea. During the same period indiscriminate catching by fishers using very small meshed nets, particularly bag nets and small seine nets, lead to large-scale destruction of the juveniles. The estimated catch of the juveniles fluctuate between 44.1 and 151.0 t

averaging 85.1 t per year during the period 1998 to 2005. The recorded size and weight of the juveniles, ranged from 6.2 to 15.5 cm and 2.0 to 28.0 g, respectively. Since the last few years maximum recorded size of table Hilsa was below 500 g. The quantum of destruction of the juveniles showed decline trend since 2000-2001, which may be attributed to the fall in the spawning success of the species and their recruitment.



Catch trend of Hilsa juveniles in Hooghly estuarine system

This wanton destruction of fish/prawn seeds apart from other factors has resulted in a negative impact on the fish production. A study conducted by CIFRI in estuaries viz. Hooghly, Matlah, Saptamukhi, Thakuran, Bidya, Jheela indicate that the average catch of seeds has declined from 10,062 nos/net/day in 1992 to 2,500 nos/net/day in 2005. This situation can be arrested by rational / selective seed exploitation, which is the key to sustenance of fish stocks in the estuary. Towards this end CIFRI has been promoting a co-management initiative by creating awareness about conservation among the stakeholders.

CIFRI took initiative in educating people viz. members of fishermen cooperatives, local fishers, gram Panchayat members, NGOs about the benefit of implementing mesh size regulation, observation of closed season and harmful impact of wanton destruction of fish seed and juveniles. Adopting different extension methodologies these target groups were persuaded to use nets of mesh size 3"-4" and voluntarily refrain from wanton destruction of fish/prawns seed and juveniles by implementing the message of "Allow a fish to breed at least once in life".

A feed-back from such Mass Awareness campaigns indicates that fishermen now realize negative impacts of fishing practices followed by them but they urge the government authorities to ensure that the production of small mesh size nets is stopped at factory level, so that no fishermen will be in a position to procure and operate small meshed net. Further, they expressed need for part time alternative livelihood provision for fishers during closed fishing season. Therefore, issues raised by fishers need to be addressed before conservation action plans are made effective at the ground level.

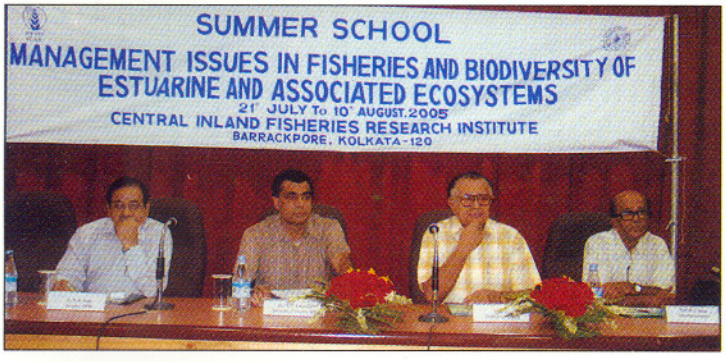
MAIN PROJECT HIGHLIGHTS

- Anti microbial activities of Sodium sulphate, Potassium sulphate, Copper sulphate, activated Carbon, Sodium nitrate, Potassium nitrate and Hydrogen peroxide were tested against pathogenic *Aeromonas hydrophila.* Among these, Sodium nitrate, Hydrogen peroxide and Copper sulphate inhibited the growth and expression of virulence of *A. hydrophila,* indicating their anti microbial potential.
- Experiments to raise stockable size seed of rohu, catla and mrigal in nylon net cages installed in a *beel* in West Bengal, registered an average growth increment of 2.33g in weight in 60 days of trial.
- Experiments on raising table size *Catla catla, Labeo rohita* and *Cirrhinus mrigala* from the respective initial weight 32-41g, 10-13g and 10-11g in pens of 0.1 ha area recorded growth of 322-414g in Catla, 196-280g in Rohu and 88-117g in Mrigal. These pens installed in Jaleswar, Mustafapur, Kujerbagi, Chummardah and Kanchrapara *beels* of West Bengal registered a production of 366 kg, 357 kg, 260 kg, 283 kg and 343 kg, respectively per pen in four months.
- Resource inventory and mapping of water bodies in Mayurbhanj, Rajgarh, Puri, Sundargarah, Sambalpur, Khorda and Sonarpur Districts of Orissa was completed using satellite data for preparation of their GIS database.
- A census of active fishers, their crafts including gear was conducted to estimate fish catch, effort and catch per unit effort of bag net fishery in Hooghly estuary for current winter migratory season. A drop in fishing camps, gear and crafts has been observed as compared to last year. Fish catch of the winter migratory bag net fishery at Hooghly estuary for December 2005 was estimated at 13342 tones which was 36.1 % lower as compared to that of the previous years catch.

HRD ACTIVITIES

Summer School

- A ICAR approved Summer School programme of 21day duration on 'Management Issues in fisheries and Biodiversity of Estuarine and associated Ecosystems' was organised at Barrackpore from 21st July, 2005 to 10th August. In this programme 25 participants from 7 states took part. The participants were trained in modern tools and exposed to skill development and use of new concepts in Estuarine ecology and associated ecosystem management.



Training

The following training programmes were conducted by CIFRI during the period.

- 'Management of Pen Culture' and 'Fish Farming in Pens' for three Fishermen Cooperative Societies in West Bengal during 14th, 16th and 18th July, 2005.
- 'Methodology of Sampling Survey' for Department of Fisheries, Arunachal Pradesh during 14-15 July, 2005 at Barrackpore.
- 'Mangroves and its Role in Coastal Fisheries' during 2-11 August, 2005 at Kolkata.
- Pen Culture and Participatory Rural Appraisal programme for fishers at four *beels* of Begusarai district, Bihar during 20-24 August, 2005.

- 'Management of Riverine Spawn' to the fishers of Ganga at Varanasi, Uttar Pradesh on 24th August 2005.
- 'Methodology of Sampling Survey' for Department of Fisheries, Government of Mizoram during 29-30 August, 2005.
- 'Seed collection methods in estuaries' at Madhabnagar, West Bengal on 1st September, 2005.
- PRA to assess the socio-economics of the fishers at Kujerbagi *beel*, West Bengal on 30th September, 2005.
- 'Pen Culture' at the Livestock Research Station, Assam Agricultural University, Assam during 26-28 October, 2005.
- 'Cage Culture' at Puthimari *beel*, Assam on 24th November, 2005.
- 'Fish Farming in Pen' at Panchita *beel*, West Bengal on 28th November, 2005.
- 'Inland Fisheries Development' for the Master Trainers of Latehar district, Jharkhand during 12-21st December, 2005 at Barrackpore.

- 'Wetland Management' at Bhomra Fishermen's Co-operative Society, West Bengal during 20-22nd December, 2005.
- 'Skill Development in Net Making of women' at Namkhana, West Bengal during 26-31st December, 2005.

- 'Fish Farming in Pens' at Begusarai in Bihar on 28th December, 2005.
- A PRA exercise at Bahuara *beel*, Bihar on 29th December, 2005 to assess the socio-economic conditions of fishers.
- 'Reservoir Management' at Manchanabele Reservoir, Bangalore on 29th and 30th of December 2005.

Mass Awareness Programme

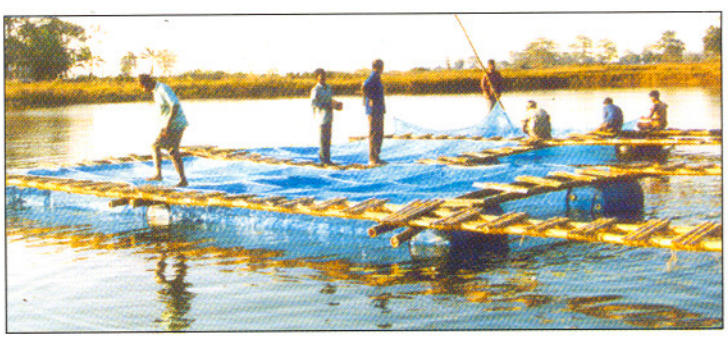
- On the need for using large mesh nets for conservation of fishes to the fishers at Bokkhali, South 24-Parganas district, West Bengal on 30-31st August, 2005.
- On 'empowering Women for Better Livelihood' for fisherwomen of Frazergunj, South 24-Parganas district, West Bengal on 19th October, 2005.
- On 'conservation of Finfish and Shellfish Seed' at Chandanpiri, Sunderbans during 30th November to 1st December, 2005.
- On 'Conservation of Fish and Shellfish Seed' at Digha, West Bengal on 30th December, 2005.

Fish Farmers Day

- The National Fish Farmers Day was organized on 10 July, 2005. On this occasion five enterprising fishermen were felicitated with 'Fish Farmer Award 2005'.
- Northeastern Regional Centre of CIFRI organized the National Fish Farmers Day in Guwahati on July 10, 2005. On this occasion about 200 fish farmers/fishermen of Kamrup district, Naogaon, Morigaon, Barpeta of Assam interacted with the scientist of the regional centre.

Meetings

- Two meetings, one on status and Prospects of Cage and Pen Culture in Inland Waters and another on Follow up Action on RCM II, were held at CIFRI, Barrackpore on 10th August, 2005 in which State Agricultural Universities and ICAR Institutes participated. The meetings were held under the chairmanship of DDG (Fisheries), ICAR.



- Director, CIFRI attended a meeting on consultancy project at North Eastern Electric Power Corporation Ltd., (NEEPCO), Shillong on 24-28th July, 2005.
- Director, CIFRI attended a meeting with the Secretary, Department of Fisheries, at Lucknow, Uttar Pradesh on 17-19th August, 2005
- Director, CIFRI attended the 7th Indian Fisheries Forum and meeting of the Directors of Fishery Institutes. Bangalore on 8-11th November, 2005. During the forum the executive committee in their special meeting elected Dr. Vass, Director, CIFRI as the Vice-President for next term. At the valedictory function of the forum it was announced by the President that the 8th Indian Fisheries Forum will be organised by CIFRI and Inland Fisheries Society of India in the year 2008 at Kolkata.
- Director, CIFRI attended a meeting with the Director of Fisheries, Haryana for discussion on dwindling of fish stocks in river Yamuna-Haryana State at Chandigarh from November 26 to 1st December, 2005.
- Director, CIFRI, participated in the International Water Conference at New Delhi on 5-11th December, 2005.
- Director, CIFRI participated in the XXXV Academic Council Meeting of CIFE Mumbai on 16th December 2005
- Director participated as the key speaker at the workshop on "Fisheries and Aquaculture in Indus River Region" at PAU, Ludhiana between 21-22nd December, 2005.

WORKSHOP ORGANISED

A workshop on 'Community-based Management of Rice-fish Farming with Adaptive Learning Approach' was organized at CIFRI, Barrackpore on 27 August, 2005. The Workshop on the collaborative project between World Fish Center-Central Inland Fisheries Research Institute on "Community-based fish culture in seasonally flooded rice fields in India" was attended and chaired by Dr. S.Ayyappan, DDG (Fy), ICAR. In his remarks he stressed upon: i) identification of areas/districts with potential for rice-fish farming, ii) the thrust areas in deepwater rice-fish (DWR) farming, iii) issues of policy support for DWR fish farming; e.g. infrastructural facilities, subsidies, ownership, institutions and credit. Dr. Robert Arthur, from MARG, London, attended the Workshop and presented the findings of the adaptive learning approach (ALA) in rice-fish farming. Shri N.K. Saha and Dr. S. Bardhan Roy, Department of Agricultural, Government of West Bengal, Kolkata presented their findings on Rice-Fish cultivation in seasonally flooded deepwater ecosystems of West Bengal.

Dr. Utpal Bhaumik, Principal Investigator of the project from CIFRI, highlighted that under the project a fish production of 600-800kg/ha/4-5 months was achieved from freshwater paddy field whereas from brackishwater paddy fields 1050 kg/ha was obtained (in 2 crops) with enhanced production of paddy to the tune of 6-8 t/ ha. Dr. P.K. Pandit, Coordinator presented a brief on socio-economic and institutional issues identified for Rice-Fish farming under the project. Dr.K.K.Vass, Director, CIFRI summarized the proceedings. The recommendations were discussed in the house for approval. About 50 scientists, farmers and officers from the various departments attended the workshop.

A JOINT INSPECTION VISIT TO CIFRI & CRIJAF BY UNION AGRICULTURE MINISTER

Honorable Union Minister of Agriculture and Consumer Affairs, Food and Public Distribution, Government of India. and President of ICAR, Shri Sharad Pawar Ji had a joint inspection visit of CIFRI and CRIJAF at Barrackpore on 19th October, 2005. Shri Pawar was received at CIFRI by the Secretary DARE and the D.G. ICAR Dr. Mangala Rai; DDG (Fy) Dr. S. Ayyappan; Directors of CIFRI and CRIJAF, Dr. K.K. Vass and Dr. H.S.Sen, respectively.

Shri Pawar inspected the exhibition set up on this occasion by CIFRI and CRIJAF, depicting the achievements in inland fisheries and jute sector. He also visited the Aquarium house and laboratories of CIFRI, where honorable Minister was apprised by the scientists about the current research work carried out by them in different emerging areas of inland fisheries. The DG, ICAR also interacted with the scientists and visited the various laboratories of CIFRI. The Honorable Minister also presided over an interaction meeting in which apart from scientists from both institutes, representatives of fishers, farmers, farmwomen and entrepreneurs of fishery and jute sector were present. To start with Dr. Mangala Rai, DG, ICAR while extending a warm welcome to the Honorable Minister and all the participants to this interaction meeting, informed the Honorable Minister, about the history and the importance of research work carried out by CIFRI & CRIJAF. Dr. Vass and Dr. Sen, the respective directors of CIFRI and CRIJAF, presented a brief overview of each sector before the Honorable Minister and the gathering. In this meeting representatives of each sector flagged certain issues before the Honorable Minister, the secretary DARE assured that appropriate action will be taken to address them after examination.

The Honorable Minister addressed the gathering and said that he was happy to know the achievement of both the institutes but due to paucity of time this inspection visit was brief. He expressed that in future he will find time to have a longer interaction with scientist of each institute. He advised the scientists to work hard to provide solutions to the farmers' problems in both the sectors. At the end of meeting Dr. Ayyappan DDG (Fisheries) proposed a vote of thanks.

OUTREACH

In order to make aware the achievements of inland fisheries to different users groups in different parts of the country the CIFRI depicted its work at following national level exhibitions.

- At 6th Agricultural International Exhibition, the 'Agri Intex 2005' organized by Coimbatore District Small Industries Association (CODISSIA) at Codissia Trade Fair Complex, Coimbatore during August 11 to 16, 2005.

- Organized in connection with the 7th Asian Fisheries Forum at Bangalore during 8-11th November, 2005.

- At the workshop on "Fisheries and Aquaculture in Indus River Region" by the Indian Society of Fisheries Professionals at Ludhiana during December 21-22, 2005.

- Organized by Sundarban Krishi Mela & Loko Sanaskirti Utsab 2005 during 20.12.05 to 29.12.05 Kultali, Sunderbans, West Bengal.
- Organized by Bahurupee Sangha, Taldi, South 24 Parganas during 22.12.05 to 31.12.05., West Bengal.

VISITORS

The following distinguished persons visited the Institute during this period :

Shri Sharad Pawar Ji Honorable Union Minister of Agriculture and Consumer Affairs, Food and Public Distribution, Government of India. and President of ICAR

Dr. Mangala Rai, Secretary DARE (GOI) and Director General, ICAR, New Delhi

Dr. S.Ayyappan, DDG (Fy), ICAR.

Dr. H.S. Sen, Director, CRIJAF.

Sri R.P.S Kahlon, The Secretary, Department of Fisheries, Govt. of West Bengal.

Sri S.K. Das, Zonal Coordinator, ICAR, Kolkata.

Dr. D.K. Bandhopadhyay, V.C. WBUASFS, Kolkata.

Dr. Robert Arthur, Senior Scientist, MRAG, London.

Dr. Nicos Perez, Coordinator, World Fish Centre, Penang, Malaysia.

PUBLICATIONS

During the period July to Dec., 2005 following publications were brought out by the Institute on various topical themes in capture fisheries:

- CIFRI News, Vol. 10, No. 1 Jan-June, 2005.
- CIFRI Annual Report (2004-2005)
- Fishing Crafts and Gears of North Eastern India, Bull. No. 142

STAFF NEWS

Promotion

A. Scientist	*To*	*w.e.f*
Dr. R.K. Manna	Scientist (S.S.)	11.11.2003
Dr. S.K. Manna	Scientist (S.S.)	23.12.2003
Dr. Md. Aftabuddin	Scientist (S.S.)	14.09.2004

B. Technical	*To*	*w.e.f*
Smt. Keya Saha	T-6	01.01.2004
Shri D.K. Biswas	T-6	01.01.2004
Shri K.K. Sharma	T-6	01.07.2004
Smt. Sucheta Majumder	T-6	01.07.2004
Dr.(Smt.) Ranjana A. Srivastava,	T-4	27.07.2004
Shri R.L. Balmiki	T-4	01.01.2000
Shri D. Saha	T-3	01.07.2004
Shri S. Bandopadhyay	T-3	01.07.2004
Smt. Suvra Saha	T-3	01.01.2004
Shri Atanu Das	T-3	01.01.2004
Shri S.C. Biswas	T-2	29.01.2004
Shri T.K. Halder	T-2	12.08.2004
Shri Manabendra Roy	T-2	23.07.2004
Shri G. Paramanick	T-2	02.08.2004

C. Administration	*Position*	*w.e.f*
Shri Kishore Shaw	Senior Clerk	12.08.2005

D. Supporting	*Position*	*w.e.f*
Shri B.N. Mandal	SSG-IV	12.08.2005
Shri B.N. Krishnappa	SSG-III	24.08.2005
Mrs. N.K. Chaki	SSG-II	24.08.2005
Mrs. Laxmi Devi	SSG-II	23.08.2005 (A.N.)
Shri P.V. Sajil	SSG-II	28.09.2005 (A.N.)

ACP Scheme

Mrs. Amita Chakraborty, Sr. Clerk
Mrs. Suvra Chakraborty. LDC
Mrs. Rupali Chatterjee, SSG-II
Mrs. Godhuly Mondal, SSG-II
Mrs. N.K. Chaki, SSG-I

Transfer

	From	*To*
Smt. Arati Rani Panigrahi, Sr. Clerk	CIFRI	CIBA
Dr. Biswajit Dash, T-4	CIFRI	CMFRI
Shri S.K. Ghosh T-4	CMFRI	CIFRI

Retirement

	Date of retirement
Shri Camil Lakra, T-5	31.08.2005
Shri B.D. Saroj, T-5	31.10.2005
Shri S.K. Maranappan, Sr. Clerk	03.11.2005 (F.N.)

Obituary

The members of staff of CIFRI express their deep sense of sorrow at the sudden and untimely demise of Shri Dipak Chakraborty, SSG-II, Shri J.N. Banerjee, Assistant and Shri Ram Prasad, SSG-III who passed away on August 3rd, 2005; September 25th, 2005 and December 21st, 2005 respectively. May the departed soul rest in peace.

ADDITION TO CIFRI LIBRARY DURING THE PERIOD

Contracts and Their Managements 2nd ed. by Ramaswamy, B. S.

Handbook on Small-Scale Freshwater Fish Farming.(FAO series 24), by FAO, Rome.

Aquatic Animal Quarantine and Health Certification in Asia (FAO Fish. Tech. Pap. No.373) by FAO, Rome.

Health Management in Asian Aquaculture (FAO Fish Tech. Pap. No. 360) by FAO, Rome.

Integrated Agriculture-Aquaculture – A Primer (FAO Tech. Pap. No.407) By FAO, Rome.

By Catch Management and the Economics of Discarding. (FAO Fish. Tech. Pap. No.370) by FAO, Rome.

Management of Agricultural Drainage Water Quality (FAO Fish Tech. Pap. No.13) by FAO, Rome.

Improving Agricultural Extension - a reference manual, by Swanson, Burton E. and Robert P. Bertz & Ors.

DNA-Based Molecular Diagnostic Techniques, (FAO Fish. Tech. Pap. No. 395) by Walker, Peter and Rohana Subasinghe.

Towards Safe and Effective Use of Chemicals in Coastal Aquaculture. (Gesamp report and studies No. 65) by FAO, Rome.

Modern Water Control and Management Practices in Irrigation: Impact on Performance, by Burt, Charles M. and Stuart, N. Styles.

Wastewater Treatment in the Fishery Industry. (FAO Fish. Tech. Pap. No. No.355) By Gonzalez, J. F.

Genetics Resources of Indian Major Carps.(FAO Fish. Tech. Pap. No. 387). By Reddy, P.V. G. K.

Control of Water Pollution from Agriculture. (FAO Irrigation and Drainage paper No. 55) By Ongley, Edwin D.

Interactions between Fish and Aquatic Macrophytes in Inland Water – a review. (FAO Fish Tech. Pap. No. 396) By Petr, T

Biodiversity of Mangrove Ecosystems, by Kathiresan, K. and Qasim, S. Z.

DIRECTOR'S DESK

Dear Reader,

Water was the critical element for the appearance of life on Earth, and it is also crucial for its survival. Conserving biodiversity of inland waters is essential to maintain the important goods and services that these ecosystems provide. It is no accident that river valleys and their floodplains have been the focus of human civilizations for over 6000 years. Less than 1% of the Earth's water resources is freshwater, and this resource is unevenly distributed. It is also over exploited and too often not well managed. Globally we use about 4000 km3 of water every year, equivalent to 20% of the world's rivers' base flows. An estimated 50% of the wetlands have been lost during last century, while overexploitation is threatening most of the freshwater fisheries. Regarding biodiversity, over 700 freshwater species are currently listed on the IUCN Red Data List of endangered species.

Therefore, emerging freshwater scarcity has been recognized as an issue of utmost importance. Balancing the needs of the aquatic environment and other uses is becoming critical in many of the river systems in our country as population and associated water demands increase. In this context, there lack of understanding about environmental water allocation, which involves striking the right balance between allocation of water for direct human use (e.g. for agriculture , power generation, domestic purposes and industry) and indirect human use (maintenance of ecosystem goods and services).

A recent and time-scale assessment of the status of freshwater ecosystems by CIFRI showed that many freshwater fish species are facing rapid population decline or are threatened , and yields from many open-water fishery resources have dwindled as a result of regulated flows , habitat degradation and pollution. Therefore, challenge for open-water fish stock management is very demanding. Not only have we to make efforts to sustain the existing contribution to inland production basket at the range of 16-20 percent but also to find ways and means to raise this contribution by 10 percent to help in achieving the future inland fish production targets. Hence any water management issue does affect inland open-water fishery directly and we should be recognized as one of the critical stakeholders of freshwater in the country.

The scientists working in inland fisheries and aquatic ecology, will have to develop implementable in-situ and ex-situ technologies to conserve and protect the fish stocks in our river systems by ensuring, natural breeding, habitat restoration, and availability of unstressed food chain for the stocks to sustain on. At the same time approaches towards utilizing biological / biotechnological tools to mitigate / breakdown pollution loads will have to be evolved. This will require standardizing the ecosystem based bio-manipulation techniques. Ultimately work out alternative strategies to compensate the fish yield decline, from river systems, as far as possible, through ecological management of other manageable open-water ecosystems viz., reservoirs and wetlands.

K.K.Vass

Published by : Dr. K.K.Vass, Director, Central Inland Fisheries Research Institute, Barrackpore, Kolkata-700120
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